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**Economic Commission for Europe**

Committee on Sustainable Energy

Group of Experts on Cleaner Electricity Systems

**Nineteenth session**

Geneva, 3–4 October 2023

Item 13 of the Annotated provisional agenda

 DRAFT Report of the Group of Experts on Cleaner Electricity Systems on its nineteenth session
as adoped 04 October 2023

 I. Introduction

1. The nineteenth session of the Group of Experts on Cleaner Electricity (the Group of Experts) was held during two days from 3 to 4 October 2023.

2. This report summarizes the proceedings of the Group of Experts at its nineteenth session. All the documents related to the session are available on the website of the United Nations Economic Commission for Europe (ECE).[[1]](#footnote-2)

 II. Attendance

3. The session of the Group of Experts was attended by […] participants. Of these, […] were participating in-person and […] contributed to the session by providing video addresses.

4. Experts from the following ECE member States participated: […].

5. The following United Nations specialized agencies, funds and programmes were in attendance: […].

6. The meeting was also attended by representatives of [non-governmental organizations, academia, and private sector, as well as by independent experts].

 III. Adoption of the agenda (agenda item 1)

*Documentation:* ECE/ENERGY/GE.6/2022/1 – Annotated provisional agenda

7. In accordance with Rule 7 of the Rules of Procedure of the Commission (E/ECE/778/Rev.5), the first item of the provisional agenda is the adoption of the agenda.

8. The Vice-Chair of the Group of Experts, Mr. Sylvain Clermont, presented the provisional agenda as contained in ECE/ENERGY/GE.5/2023/1, which was adopted.

 IV. Opening remarks (agenda item 2)

9. A Vice-Chair of the Group of Experts delivered opening remarks summarizing the progress achieved during the intersessional period. The Group of Experts noted particularly the progress in addressing, jointly with other subsidiary bodies of the Committee on Sustainable Energy, the aspects of:

(a) Improving electricity system resilience, including through deployment of energy storage options and increasing energy connectivity;

(b) Changing patterns of energy end uses, including integration of electric mobility and other smart assets at the grid edge, impacting reliability of the energy system;

(c) Cybersecurity of digitalized energy systems.

 V. Election of officers (agenda item 3)

10. The secretariat received the following nominations from the member States to stand for election at the nineteenth session of the Group of Experts: Mr. Jon Gibbins (United Kingdom of Great Britain and Northern Ireland) and Mr. Furugzod Usmonov (Tajikistan) as Vice-Chairs.

11. The Group of Experts elected Mr. Jon Gibbins (United Kingdom of Great Britain and Northern Ireland) and Mr. Furugzod Usmonov (Tajikistan) as Vice-Chairs. The Bureau of the Group of Experts (the Bureau) also invited Mr. Vladimir Budinsky and Mr. Sylvain Clermont to continue their service on the Bureau as Vice-Chairs to strengthen its activities. The term of office for the elected members of the Bureau is two years. The Group of Experts has the following members to serve on the Bureau:

(a) Until the conclusion of its twentieth session: Mr. Jim Robb (United States of America), as Chair; and Mr. King Lee (World Nuclear Association), Mr. Andrew Minchener (International Centre for Sustainable Carbon), and Mr. Antoine Herzog (Électricité de France) as Vice-Chairs.

(b) Until the conclusion of its twenty-first session: Mr. Jon Gibbins (United Kingdom of Great Britain and Northern Ireland), Mr. Furugzod Usmonov (Tajikistan), Mr. Vladimir Budinsky (ZSDNP) and Mr. Sylvain Clermont (DigiTransfo Expertise) as Vice-Chairs.

4. The Chair of the Group of Experts is *ex officio* Vice-Chair of the Committee on Sustainable Energy.

 V. Activities and priorities of the Committee on Sustainable Energy and matters for consideration by the Group of Experts on Cleaner Electricity Systems (agenda item 4)

12. The secretariat provided an overview of recent activities of the Committee on Sustainable Energy following its thirty-second session, 13-15 September 2023, as well as decisions taken by the parent bodies related to the work of the Group of the Experts.

13. The Regional Advisor provided an overview of projects, studies, meetings and events, and other collaboration activities relevant to the work of the Group of the Experts.

14. The Group of Experts reconfirmed its intention to lead and/or to contribute, within its scope of expertise and in line with the United Nations Economic Commission for Europe Platform on Resilient Energy Systems Work Plan (ECE/ENERGY/2023/11), to activities related to:

(a) Sustainable resource management and access to critical raw materials to help countries understand what resources they have available;

(b) Low-, zero- and negative-carbon technology interplay;

(c) Just Transition; and

(d) Urban planning and modelling of decentralized energy systems.

(e) Adequacy of proposed solutions to meet continuity of electricity supply.

 VI. Plenary session (agenda item 5)

*Documentation:* ECE/ENERGY/2023/11 – United Nations Economic Commission for Europe Platform on Resilient Energy Systems Work Plan

15. The Group of Experts discussed and identified a set of aspects found crucial for reliable, resilient, and secure energy systems in the ECE region.

16. Such a set of aspects will align with the input made by the Committee on Sustainable Energy at its thirty-second session. In particular, work on resiliency will address aspects of improving electricity system resilience, including through deployment of energy storage options and increasing energy connectivity; assessing the impacts of changing patterns of energy end uses (including integration of e-mobility and other smart assets at the grid edge) on reliability of the energy system, unlocking the potential of energy system efficiency through digitalization including issues related to cybersecurity and data analytics including the use of Artificial Intelligence.

17. The Group of Experts:

(a) Requested the Bureau, with support from the secretariat, to consider and formulate activities that would further support efforts to increase the resiliency of the energy systems in the ECE region.

(b) Noted that the expanded scope of activities requires extrabudgetary funding and in-kind contributions from stakeholders, and called upon member States and other interested Parties to consider providing such support necessary for delivering on newly defined tasks.

 VII. Achieving net-zero emissions power systems (agenda item 6)

*Documentation:* ECE/ENERGY/GE.5/2023/5 – Transitioning to net-zero emissions power systems – common principles for reliability of supply

18. The document ECE/ENERGY/GE.5/2023/5 – Transitioning to net-zero emissions power systems – common principles for reliability of supply, developed in support of the activities of the Committee on Sustainable Energy, was presented. It explores the risks of possible unintentional losses in system reliability during energy transition, and discusses the issue of retention of sufficient dispatchable capacity amid transitioning to net-zero emissions electricity systems, to maintain grid reliability and resilience. A subsequent panel discussion further addressed the related matters.

19. The Group of Experts:

(a) Observed that ambitious climate mitigation and adaptation policies, advocating for rapid development and implementation of low-carbon power production options, can pose a significant challenge to the power generation sector of member States, if they do not have sufficient capacity for such quick and profound transformation.

(b) Discussed the matters and challenges related to integration of renewables, distributed energy resources, energy storage, energy efficiency and conservation, role of energy end-users, and optimization of grid operations in the context of the electrification trend that requires a massive increase in the scale of the electricity grid.

(c) Noted that in certain member States retention of key fossil-based generation assets for some period might be necessary to ensure reliability of supply to lessen the expected hardships, in particular those related to loss of employment, of transition by spreading its effects over time and thus allowing the process to be conducted in more gradual and equitable manner through job preservation. Even though those assets are likely to be generating much less energy (and concomitant carbon emissions), they will still be providing high-value reliability services.

(d) Acknowledging the investment requirement for the attainment of Sustainable Development Goal 7 and other Goals in relation to energy, recommended to continue exploring and assessing market mechanisms and financing conditions that could contribute to the transformation of the electricity systems toward the net-zero aspirations while still maintaining reliability and affordability.

(e) Observed that international standards governing grid support performance of inverter-based resources (solar photovoltaics, wind, battery energy storage, etc.), as well as modelling for their behaviour as they continue to grow on the electricity grid, are essential. Called, therefore, on the member States for the development of common international standards for the reliable operation of inverter-based resources.

 VIII. Reliability and cyber resiliency of smart integrated energy systems (agenda item 7)

*Documentation:* ECE/ENERGY/GE.6/2023/3-ECE/ENERGY/GE.5/2023/3 – Key considerations and solutions to ensure cyber resiliency in the smart integrated energy systems

ECE/ENERGY/GE.6/2023/4-ECE/ENERGY/GE.5/2023/4 – Improving efficiency and reliability of energy systems by means of big data analytics

20. The Group of Experts explored the contribution of digitalization to the reliability of energy systems, making them more connected and efficient. The focus was on cyber resiliency in smart integrated energy systems.

21. The Group of Experts:

(a) Expressed appreciation for the close and fruitful collaboration with the Group of Experts on Energy Efficiency and its Task Force on Digitalization in Energy on advancing the digitalization of electricity systems and took note of two documents developed in close collaboration between the two Groups of Experts: (i) ECE/ENERGY/GE.6/2023/3-ECE/ENERGY/GE.5/2023/3 – Key considerations and solutions to ensure cyber resiliency in the smart integrated energy systems; (ii) ECE/ENERGY/GE.6/2023/4-ECE/ENERGY/GE.5/2023/4 – Improving efficiency and reliability of energy systems by means of big data analytics.

(b) Discussed considerations and solutions to ensure cyber resiliency in smart and digitally integrated energy systems. Supporting the discussion, the Group of Experts noted the work of the Task Force on Digitalization in Energy, namely the document Key considerations and solutions to ensure cyber resiliency in the smart integrated energy systems (ECE/ENERGY/GE.6/2023/3-ECE/ENERGY/GE.5/2023/3). Acknowledging that cybersecurity is a challenge for critical infrastructure like energy systems, recommendations to mitigate cybersecurity risks were noted. It was noted that best practices exist for operators of critical infrastructure and contribute to a more cyber-resilient system.

(c) Discussed framework, considerations, and recommendations on how to ensure security of the energy system through cyber and physical integration into planning, design, and operational practices.

(d) Encouraged continued cooperation with the Group of Experts on Energy Efficiency and its Task Force on Digitalization in Energy and proposed to join forces to further explore the contribution of digitalization to a more reliable, resilient and cleaner energy system, to expand outreach through the organization of, and active participation in seminars, technical conferences and other events and to further collaborate with industry groups and other UN regions. The Group of Experts will seek to complement content in cybersecurity and artificial intelligence use.

(e) Agreed, in line with its mandate, to initiate an in-depth work on electricity system resilience, as well as on the importance of transmission and distribution grid modernization and digitalization to mitigate the impacts of climate change. The Group of Experts agreed to also look at the role of electrification of the transportation sector, its impact on the electricity system, and at technology compatibility issues.

 IX. Exploring pathways for a balanced integration of electric mobility into power systems (agenda item 8)

22. The Group of Experts:

(a) Reconfirmed that e-mobility will have as much impact on the design and operation of the electric grid as it will have on transportation systems themselves. Electric loads will grow significantly, and therefore location and operation of Electrical Vehicles (EV) chargers (private or public) need to be integrated with grid and resource planning.

(b) Recognized, in keeping with the observations made at the ECE Working Party on Transport Trends and Economics (WP.5) at its 36th session, that facilitating progress in electric mobility calls for the establishment of a dedicated informal task force focusing on coordinating efforts related to developments of EVs and their charging infrastructure both within ECE and beyond, in collaboration with other concerned institutions. Expressed readiness to work in close consultation with WP.5 and subsidiary bodies of the Committee on Sustainable Energy, notably the Group of Experts on Energy Efficiency, on the development of draft terms of reference for such a task force.

(c) Agreed to continue explore opportunities for securing in-kind contributions and extrabudgetary funding including from partner organizations for specific projects, notably focused on activities related to (i) consideration on the degree of integration of e-mobility into electricity systems and its impact on design and operations, (ii) charging management and (iii) workshops and seminars to better understand issues and share findings.

 X. Implementation of the Work Plan of the Group of Experts on Cleaner Electricity Systems for 2024-2025 (agenda item 9)

*Documentation:* ECE/ENERGY/2023/9 – Work Plan of the Group of Experts on Cleaner Electricity Systems for 2024-2025

23. The Vice-Chair provided an update on the progress in implementation of the Work Plan of the Group of Experts for 2022-2023 (ECE/ENERGY/2021/8). The main thematic areas that formed the basis for the Group of Experts’ work in the 2022-2023 period include: (A) Electricity as a driver for achieving deep transformation of the energy system; (B) Technology interplay under a carbon neutral energy system; (C) Modernization and decarbonization of electric power systems in ECE subregions; (D) Digitalizing electricity systems.

24. The Group of Experts:

(a) Took note of the results achieved in the course of implementation of the Work Plan of the Group of Experts for 2022-2023.

(b) Welcomed approval by the Committee on Sustainable Energy at its thirty-second session (13-15 September 2023) of the Work Plan of the Group of Experts for 2024-2025 (ECE/ENERGY/2023/9), which contains the following four sections: (A) Improving electricity system resiliency as an enabler for transformation of the energy system; (B) Supporting the creation of favourable power market design and financing conditions for the transformation of the electricity systems; (C) Assessing the contribution of digitalization to designing cleaner electricity systems; (D) Exploring the impact of e-mobility integration on the electric system design and operation. The work plan identifies clear deliverables and timeline.

(c) Recognized that collaboration across the subsidiary bodies of the Committee on Sustainable Energy, the other ECE subprogrammes, and engagement of relevant external groups is key to ensure timely and quality deliverables.

(d) Deemed securing extrabudgetary resources critical for attainment of the objectives set forward in the Work Plan for 2024-2025, and encouraged the Bureau to make efforts to explore funding opportunities through extrabudgetary projects.

 XI. Other business (agenda item 10)

25. At the time the draft report was prepared, no issues were raised under this agenda item.

 XII. Dates of the next meeting (agenda item 11)

26. The twentieth session of the Group of Experts is scheduled to take place in Geneva on 16 and 17 September 2024.

 XII. Adoption of conclusions and recommendations (agenda item 12)

*Documentation:* GECES-19/2023/INF.1 – Draft conclusions and recommendations arising from the ninth session of the Group of Experts on Cleaner Electricity Systems

27. Draft conclusions and recommendations arising from the nineteenth session of the Group of Experts on Cleaner Electricity Systems (GECES-19/2023/INF.1) were circulated to participants and Geneva Permanent Representations.

28. The Group of Experts adopted the conclusions and recommendations arising from its nineteenth session, which are included under the relevant agenda items highlighted in this report.

 XIII. Adoption of the report and close of the meeting (agenda item 13)

*Documentation:* ECE/ENERGY/GE.5/2023/2 – Report of the Group of Experts on Cleaner Electricity Systems on its nineteenth session

29. The Vice-Chair of the Group of Experts, with the assistance of the secretariat, summarized the discussions in a report, reflecting in a concise and factual manner the views expressed by participants.

30. The report of the session was adopted subject to any necessary editing and formatting.

31. Following that, the session was closed.

1. Official documents, room documents, presentations and video addresses delivered at the meeting, as well as other relevant materials are available on the ECE website (see <https://unece.org/sustainable-energy/events/group-experts-cleaner-electricity-systems-nineteenth-session>). Official documents of the session are also available at Official Document System of the United Nations (see <http://documents.un.org/>). [↑](#footnote-ref-2)